**2005 Rise To The Future Award Nomination**

**Nominee: Dr. Susan B. Adams, Research Fishery Biologist, Southern Research Station, Center for Bottomland Hardwoods Research, Oxford, MS**

Dr. Susie Adams has built a strong, collaborative research program that is wide-ranging in scope but focused keenly on specific needs of land managers and the aquatic conservation community. The diversity of her research pursuits reflects the spectacular diversity of aquatic organisms native to the southeastern United States. Although diverse, Susie's research is unified by a common goal of providing sorely needed ecological data on some of the nation's most imperiled but poorly known creatures including small-stream fishes, anadromous fishes, crayfishes, and amphibians. In 2005 Susie's research program saw the culmination of these efforts, resulting in a number of peer-reviewed publications and an international symposium, both of which reported on and synthesized past work, while simultaneously yielding new results that challenge long-held notions about her study animals.

After collaborating on a study of diadromous fishes of Gulf Coast river systems, Susie initiated a collaborative research project on Alabama shad, an anadromous species formerly widespread in the Southeast, but now a candidate for listing under the Endangered Species Act. In addition to her own work, three graduate research projects have resulted from this effort. The research group has determined the range-wide population genetic structure of the species, as well as life history parameters, details of habitat use, and an index of population size for the population in the Pascagoula River. Several results have refuted assumptions held for decades about the species and will cause re-evaluation of conservation strategies. The project is now expanding to other river drainages, and the resulting information will be used in a status review of the species. The work is funded by federal, state, and non-profit organizations, indicating the broad level of interest in the research.

Susie initiated and co-organized an international symposium on the "Phylogenetics and Ecology of Sculpins" at the 2005 meeting of the American Fisheries Society in Anchorage, AK. She obtained funding to bring a scientist from Japan to speak at the symposium. She and her co-organizer are coordinating and serving as associate editors for a special module of 12 papers from the symposium to be published in the Transactions of the American Fisheries Society. Susie continues her research into the movements and distributions of sculpins in western Montana, where her research team recently discovered a new sculpin species. The team is using sculpins as a model for examining metapopulation theories and the importance of connectivity among populations of stream fishes.

Susie has conducted a variety of other research on the ecology of stream fishes. She studied patterns and mechanisms of brook trout invasion in Idaho and Montana, which led to management recommendations about planning for salmonid conservation in the presence of brook trout. In a recent paper, she examined the effects of drought on stream fish communities and the subsequent recovery of those communities. She has led a

variety of projects on the relationship between fish and stream habitat conditions, including an evaluation of the response of fish communities to channel incisement -- one of the major threats facing stream fishes in the Southeast.

Mississippi is home to one of the most diverse crayfish faunas in the world, but little is known about this ecologically and economically vital resource. Susie has pioneered research on the crayfishes of Mississippi and is now the foremost expert on stream crayfishes in the state. Through collaboration with other crayfish experts, her research examines many facets of crayfish biology including phylogenetic relationships, recovery after disturbance, predator-prey interactions, life history, and distributions in relation to habitat characteristics. This vigorous component of Susie's research program is producing peer-reviewed scientific publications, presentations to scientific societies, management support to National Forest districts, and a laypersons' guide to crayfish identification.

Susie has recently published two influential papers on amphibian movements in streams. These papers have contradicted existing paradigms that suggested minimal movements by adult frogs in streams. In contrast, Susie's results show that in some situations adult frogs use streams as dispersal corridors. These results have major implications for stream passage design and conservation of declining amphibian populations.

Finally, Susie's extensive research in the Pascagoula River drainage over the last several years has placed her in a position to learn valuable ecological lessons from Hurricane Katrina. In addition to the enormous human tragedy, Katrina had far-reaching effects on all other components of the Gulf Coast ecosystem. Susie documented a nearly complete fish and mussel kill on the Pascagoula River caused evidently by a surge of saltwater into sections of the river normally above tidal influence. One month after the hurricane, study sites that previously supported a wide array of freshwater fish species were inhabited only by a handful of estuarine species. Susie has already published a hard-hitting perspective piece on this topic in *Watershed* magazine, and her continuing research in this ecosystem will provide new insights into the role of natural catastrophic events in aquatic community ecology.